

AMENDMENT TO THE CLAIMS

1. (Currently Amended) A method for negotiating an exchange of image processing functionality between first and second devices over a bi-directional communication link, comprising the steps of:

communicating a function description between the first and second devices, the function description including information concerning functionality available in the first or second devices;

negotiating between the first and second devices to assign image processing functionality to the first or second device in accordance with the functionality available in the first or second device, wherein the assigned image processing functionality effects an image transfer between the first and second devices; and

transferring transmitting from one of the first and second devices to the other of the first and second devices, in accordance with the assignment of the image processing functionality, program code that implements functionality assigned to the other of the devices and needed by the other of the devices, wherein both the first and second devices can execute the program code to perform the image processing functionality and the program code is executed by the other of the devices in accordance with the transmission of the program code from the one device to the other device.

2. (Original) A method according to Claim 1, further comprising the step of transferring image data from the first device to the second device using the negotiated assignment of functionality, including functionality that has been exported from

one device to the other.

3. (Currently Amended) A method for negotiating an exchange of image processing functionality between first and second devices over a bi-directional communication link, comprising the steps of:

communicating a function description between the first and second devices, the function description including information concerning functionality available in the first or second devices;

negotiating between the first and second devices to assign image processing functionality to the first or second device in accordance with the functionality available in the first or second device, wherein the assigned image processing functionality effects an image transfer between the first and second devices; and

transferring from one of the first and second devices to the other of the first and second devices, in accordance with the assignment of the image processing functionality, program code that implements functionality assigned to the other of the devices and needed by the other of the devices, wherein the program code is executed by the other of the devices, according to Claim 1,

wherein said step of negotiating an assignment of functionality includes the steps of:

determining alternative processing sequences for image data transfer;
applying a cost function to each alternative; and
selecting the alternative with the lowest cost function.

4. (Original) A method according to Claim 3, wherein said cost function contemplates both image transfer time and image quality.

5. (Currently Amended) A method according to Claim 1, further comprising the step of obtaining function code descriptions for functionality in a repository of image processing functionality, wherein said step of negotiating to assign functionality includes the step of negotiating in respect of the image processing functionality exported from the repository, and wherein said step of transmitting transferring functionality includes the step of transmitting transferring functionality from the repository.

6. Cancelled.

7. (Currently Amended) A method according to Claim 1, wherein said first and second devices retain transferred transmitted functionality for use in connection with subsequent image processing jobs.

8. (Currently Amended) A network interface card for interfacing between an image processing device and a local area network, said network interface card including:

a network protocol stack for interfacing between the local area network and the network interface card, and for receiving network communications directed to the image processing device;

a device-specific application layer that provides device-specific image processing functionality for driving the image processing device, the device-specific application layer receiving network communications directed to the device from the protocol stack; and

a negotiation controller for negotiating an exchange of image processing functionality with another device on the local area network, the negotiation controller being programmed with process steps according to the method of any one of Claims 1 to 5, 7, 17, 20, 25 and 26.

9. (Currently Amended) Computer-executable process steps stored on a computer readable storage medium, the computer executable process steps for negotiating an exchange of image processing functionality between first and second devices over a bi-directional communication link, said computer executable process steps including steps according to any of Claims 1 to 5, 7, 17, 20, 25 and 26.

10. (Currently Amended) A storage medium for storing computer executable process steps to effect negotiation of an exchange of image processing functionality between first and second devices over a bi-directional communication link, said process steps including steps according to any of Claims 1 to 5, 7, 17, 20, 25 and 26.

11. (Currently Amended) A network interface card for interfacing between a network and an image processing apparatus, the network interface card

comprising:

a communicator adapted to communicate a function description with an external device, the function description including information concerning functionality available in the image processing apparatus or the external device;

a negotiator adapted to negotiate between the image processing apparatus and the external device to assign image processing functionality to the image processing apparatus or the external device in accordance with the functionality available in the image processing apparatus or the external device, wherein the assigned image processing functionality effects an image transfer between the image processing apparatus and the external device; and

a program code communicator adapted to communicate between the image processing apparatus and the external device, in accordance with the assignment of the image processing functionality, program code that implements image processing functionality assigned to and needed by one of the image processing apparatus and the external device, wherein both the first and second devices can execute the program code to perform the image processing functionality and the program code is executed by the one of the image processing apparatus and the external device in accordance with the transmission of the program code from the one device to the other device.

12. to 13. (Cancelled)

14. (Currently Amended) An image processing apparatus comprising:

a communicator adapted to communicate a function description with the external device, the function description including information concerning image processing functionality available in the image processing apparatus or the external device;

a negotiator adapted to negotiate between the image processing apparatus and the external device to assign image processing functionality to the image processing apparatus or the external device in accordance with the functionality available in the image processing apparatus or the external device, wherein the assigned image processing functionality effects an image transfer between the image processing apparatus and the external device; and

a program code communicator adapted to communicate between the image processing apparatus and the external device, in accordance with the assignment of the image processing functionality, program code that implements image processing functionality assigned to and needed by one of the image processing apparatus and the external device, wherein both the first and second devices can execute the program code to perform the image processing functionality and the program code is executed by the one of the image processing apparatus and the external device in accordance with the transmission of the program code from the one device to the other device.

15. (Previously Presented) An image processing apparatus according to Claim 14, further comprising an image data transmitter adapted to transmit image data to the external device based on the negotiated assignment of functionality.

16. (Previously Presented) An image processing apparatus according to Claim 14, further comprising a receiver adapted to receive program code that implements image processing functionality from the external device in case that the negotiation indicates that functionality is needed in the image processing apparatus.

17. (Previously Presented) A method according to Claim 1, wherein said step of communicating includes the steps of:

transferring the function description from one of the first and second devices to the other of the first and second devices; and

transferring the function description from the other of the first and second devices to the one of the first and second devices.

18. (Currently Amended) A network interface card for interfacing between a network and image processing apparatus, the network interface card comprising:

a communicator adapted to communicate a function description with an external device, the function description including information concerning functionality available in the image processing apparatus or the external device; and

a negotiator adapted to negotiate between the image processing apparatus and the external device to assign image processing functionality to the image processing apparatus or the external device in accordance with the functionality available in the image processing apparatus or the external device, wherein the assigned image processing functionality effects and image transfer between the image processing apparatus and the

external device; and

a receiver adapted to receive from the external device, in accordance with the assignment of the image processing functionality, program code that implements image processing functionality assigned to and needed by the image processing apparatus, wherein both the first and second devices can execute the program code to perform the image processing functionality and the program code is executed by the image processing apparatus in accordance with the transmission of the program code from the one device to the other device.

19. (Currently Amended) An image processing apparatus comprising:

a communicator adapted to communicate a function description with an external device, the function description including information concerning functionality available in the image processing apparatus or the external device; and

a negotiator adapted to negotiate between the image processing apparatus and the external device to assign image processing functionality to the image processing apparatus or the external device in accordance with the functionality available in the image processing apparatus or the external device, wherein the assigned image processing functionality effects an image transfer between the image processing apparatus and the external device; and

a receiver adapted to receive from the external device, in accordance with the assignment of image processing functionality, program code that implements image processing functionality assigned to and needed by the image processing apparatus,

wherein both the first and second devices can execute the program code to perform the image processing functionality and the program code is executed by the image processing apparatus in accordance with the transmission of the program code from the one device to the other device.

20. (Previously Presented) A method according to Claim 1, wherein negotiating an assignment of image processing functionality is based on a cost analysis, which is based at least in part on a cost of transferring the program code that implements image processing functionality between the first and second devices.

21. (Previously Presented) A network interface card according to Claim 11, wherein the negotiator is adapted to negotiate an assignment of image processing functionality based on a cost analysis, which is based at least in part on a cost of transferring the program code that implements image processing functionality to the external device.

22. (Previously Presented) An image processing apparatus according to Claim 14, wherein the negotiator is adapted to negotiate an assignment of image processing functionality based on a cost analysis, which is based at least in part on a cost of transferring the program code that implements image processing functionality to the external device.

23. (Previously Presented) A network interface card according to Claim 18, wherein the negotiator is adapted to negotiate an assignment of image processing functionality based on a cost analysis, which is based at least in part on a cost of transferring the program code that implements image processing functionality to an external device.

24. (Previously Presented) An image processing apparatus according to Claim 19, wherein the negotiator is adapted to negotiate an assignment of image processing functionality based on a cost analysis, which is based at least in part on a cost of transferring the program code that implements image processing functionality from the external device.

25. (Currently Amended) The method of Claim 1, wherein prior to the transfer of the program code, the device to which the program code is transferred lacks the image processing functionality implemented by the program code.

26. (Currently Amended) A method for negotiating an exchange of image processing functionality between first and second devices over a bi-directional communication link, comprising the steps of:
communicating a function description between the first and second devices,
the function description including information concerning functionality available in the

first or second devices;

negotiating between the first and second devices to assign image processing functionality to the first or second device in accordance with the functionality available in the first or second device, wherein the assigned image processing functionality effects an image transfer between the first and second devices; and

transferring from one of the first and second devices to the other of the first and second devices, in accordance with the assignment of the image processing functionality, program code that implements functionality assigned to the other of the devices and needed by the other of the devices, wherein the program code is executed by the other of the devices. The method of Claim 1,

wherein at the time of negotiating between the first and second device, the device to which the program code is transferred in the transferring step is unable to perform the image processing functionality implemented by the program code transferred in the transferring step.